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Ms. Gamper,

The purpose of this letter is to highlight issues in the *Draft Final Evaluation of Potential Sources of Low-Level Petroleum Hydrocarbon Compounds Detected in Groundwater, Interim Plan, Pinedale Anticline Project Area ROD,* dated May 2013 (the LLPHC Report) that the EPA believes should be addressed to strengthen the report. The EPA recommends that the following issues be addressed in the final published LLPHC Report or in the Final Groundwater/Aquifer Pollution Prevention, Mitigation and Monitoring Plan.

Conceptual Site Model and Related Uncertainties

Hydrogeologic Conceptual Site Models (CSMs) are developed to illustrate potential sources of contaminants, release mechanisms, transport of those contaminants through the subsurface and potential routes of exposure to receptors. The revised report does a better job of articulating the basis for the CSM. The EPA believes that the following issues remain in the LLPHC Report and the EPA recommends that the LLPHC Report and/or the Final Groundwater/Aquifer Pollution Prevention, Mitigation and Monitoring Plan articulate a plan to address these issues so that the currently proposed CSM and the conclusions of the LLPHC Report can be strengthened or modified accordingly:

- The presence of high level petroleum hydrocarbon compounds (HLPHCs) at several locations in the PAPA and the lack of data to characterize the lateral and vertical extent of HLPHCs prevent the definitive exclusion of the HLPHCs as a potential source of low level PHCs (LLPHCs).
- Information and/or documentation of fault and fracture networks in the Ft. Union and Wasatch Formations, and the significant affect those features may have on aquifer dynamics (both locally and regionally) limits the ability to make definitive conclusions regarding potential migratory pathways and corresponding travel times for contaminants in the PAPA.
- The history of exploration in the PAPA, and the potential for unknown historic sources including undocumented spills or other releases, the use of unlined fluid pits, poor well construction and inadequate well abandonment, make it difficult to rule out historic practices as a potential source of LLHPC contamination of groundwater in the PAPA.
- The lack of information regarding the types of chemicals used historically to develop wells in the PAPA adds uncertainty to the conclusions that LLPHCs in groundwater are not a result of historic well development techniques.

Data Analyses

The following revisions are recommended to strengthen the conclusions of the final LLPHC Report:

- The statement in Section 3.3.1.3 of the LLPHC Report regarding the potential for data above the method detection limit (MDL) but below the practical quantitation limit (PQL) to be a false positive is technically incorrect and should be revised in the LLPHC Report. The exclusion of J-flagged data that is between the MDL and the PQL is not consistent with current EPA or industry practice. Chemical constituents that may be related to oil and gas development processes would be expected at very low concentrations. Many MCLs and state groundwater standards are at or near PQLs. By excluding this data, the LLPHC Report excludes a potentially large and valuable portion of the data set. Additional discussion and analysis that include J-flagged data are recommended in the final LLPHC report. The inclusion of J-flagged data for all future data analyses is also recommended.
- The inclusion of simplified summary tables that compare the chemical signatures of potential sources of LLPHCs to groundwater samples is recommended. The current tables presented in the LLPHC Report are informative, but difficult to interpret.

Future Monitoring

The conclusions of the LLPHC Report suggests that future monitoring and reporting in the PAPA should have two primary goals: 1) Further validation of the current CSM including resolution of outstanding issues; and 2) Detection of releases of contaminants related to oil and gas activities. The following objectives are recommended for inclusion in the Final Groundwater/Aquifer Pollution Prevention, Mitigation and Monitoring Plan to support the primary goals:

- Assessment of the vertical migration theory proposed by the current CSM, and assessment of alternative CSMs such as possible migration through fault or fractures. Assessment of the CSM and alternative CSMs would include monitoring areas that are not proximal to oil and gas exploration and production.
- Areas of high level PHC detections should be properly delineated and monitored to determine whether high level PHC detections may be a potential source of LLPHCs in the PAPA, and to facilitate proper selection of an appropriate remedy.
- Monitoring of springs in the PAPA for volatile and semi-volatile organic compounds. Further characterization of springs will bolster the understanding of the potential connection between perched, shallow, and deeper groundwater in the Wasatch Formation.

The EPA appreciates the opportunity to comment on the aforementioned document. If you have questions or concerns, please do not hesitate to contact me at (303) 312-6283, or by email: schmidt.andrew@epa.gov.

Sincerely,

Andrew P. Schmidt, P.G.
Regional Superfund Hydrogeologist
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